

What is claimed is:

1. A system that facilitates optimizing industrial business operations, comprising:
  - a component that receives data relating to state(s) of a subset of machines that are part of the industrial business operations; and
  - a prognostics engine that infers future state(s) of at least a subset of the operations based in part on the received data.
2. The system of claim 1, further comprising a host computer that executes the prognostic engine.
3. The system of claim 1, the prognostic engine comprising a classifier.
4. The system of claim 1, at least a subset of the machines comprising prognostic components that collaborate in a distributed manner.
5. The system of claim 1, at least one of the prognostics components performs prognoses for a cluster of machines.
6. The system of claim 1, the prognosis engine and the prognostic components collaborating to improve operating rate of at least a subset of the machines.
7. The system of claim 3, the classifier performs a probabilistic analysis in connection with the inference.
8. The system of claim 1, at least a subset of the machines and/or components are represented by intelligent agents.
9. The system of claim 1, at least a subset of the machines and/or components are physically located remote from one another.

10. A method that facilitates asset optimization in an industrial automation environment, comprising:

receiving and analyzing in real-time data relating to diagnoses and prognoses of operational aspects of a subset of machines that are part of the industrial automation system; and

modifying asset utilization in the industrial automation system based at least in part as a function of the analyzed diagnostic and prognostic machine data.

11. The method of claim 10 further comprising:

selecting a desired operating point within an allowable range of operation about a system setpoint according to performance characteristics associated with at least one of the machines; and

controlling at least one machine according to the desired operating point.

12. The method of claim 10, further comprising employing an options based analysis in connection with asset management.

13. The method of claim 11, further comprising obtaining the system setpoint and the allowable range of operation from a user.

14. The method of claim 11, wherein selecting the desired operating point comprises:

correlating at least two of motor efficiency information, pump efficiency information, and motor drive efficiency information in order to derive correlated system efficiency information; and

selecting the desired operating point as the optimum efficiency point within the allowable range of operation according to the correlated system efficiency information.

15. The method of claim 14, wherein controlling the system according to the desired operating point comprises providing a motor speed signal to the motor drive according to the desired operating point.

16. The method of claim 14, further comprising obtaining at least one of the efficiency information, the allowable range, and the system setpoint from a user.

17. The method of claim 14, further comprising obtaining at least one of the efficiency information, the allowable range, and the system setpoint from a host computer.

18. The method of claim 17, wherein the at least one of the efficiency information, the allowable range, and the system setpoint is obtained via a network.

19. The method of claim 18, wherein the at least one of the efficiency information, the allowable range, and the system setpoint is obtained via wireless communications.

20. The method of claim 14, further comprising obtaining at least a portion of one of the efficiency information, the allowable range, and the system setpoint from prior operation of the system.

21. The method of claim 11, wherein selecting the desired operating point comprises:

correlating component performance information associated with at least two components in the system in order to derive correlated system performance information;  
and

selecting the desired operating point as the optimum performance point within the allowable range of operation according to the correlated system performance information.

22. The method of claim 21, wherein controlling the system according to the desired operating point comprises providing a setpoint to a controller associated with the system according to the desired operating point.

23. The method of claim 12, further comprising automatically ordering an asset *via* the Internet.

24. The method of claim 21, further comprising obtaining at least one of the performance information, the allowable range, and the system setpoint from a host computer.

25. The method of claim 24, wherein the at least one of the performance information, the allowable range, and the system setpoint is obtained via a network.

26. The method of claim 25, wherein the at least one of the performance information, the allowable range, and the system setpoint is obtained via wireless communications.

27. The method of claim 21, further comprising obtaining at least a portion of one of the performance information, the allowable range, and the system setpoint from prior operation of the system.

28. The method of claim 21, wherein the component performance information comprises at least one of life cycle cost information, efficiency information, life expectancy information, safety information, emissions information, operational cost information, MTBF information, noise information, and vibration information.

29. The method of claim 28, wherein the system comprises a motorized pump system for pumping fluid, having an electric motor operatively coupled with a pump, and a motor drive providing electrical power to the motor, wherein the component performance information comprises efficiency information related to at least two of the motor, the pump, and the motor drive, and wherein the correlated system performance information comprises cost information related to the system operational cost per unit of fluid pumped.

30. The method of claim 10, wherein the system comprises a motorized pump system having an electric motor operatively coupled with a pump, and a motor drive providing electrical power to the motor, and wherein the performance characteristics associated with a plurality of components in the system comprises life expectancies of at least two of the motor, the pump, and the motor drive.

31. The method of claim 10, wherein the system comprises a motorized pump system having an electric motor operatively coupled with a pump, and a motor drive providing electrical power to the motor, and wherein the performance characteristics associated with a plurality of components in the system comprises cost of operation associated with at least two of the motor, the pump, and the motor drive.

32. The method of claim 10, wherein selecting the desired operating point comprises measuring at least one process variable from a sensor associated with the system.

33. A system that facilitates asset optimization in an industrial automation environment, comprising:  
means for receiving and analyzing in real-time data relating to prognoses of operational aspects of machines and/or business components that are part of the industrial automation system; and  
means for regulating a subset of the machines and/or business components based at least in part as a function of the analyzed diagnostic and prognostic machine data.

34. The system of claim 33 further comprising means for inferring future states of the subset of machines.

35. The system of claim 33 further comprising means for inferring future states of the subset of business components.

36. A computer readable medium storing the components of claim 1.
37. A computer readable medium having stored thereon computer executable instructions for performing the method of claim 10.
38. A data packet adapted to be transmitted between at least two computer processes, comprising:  
a data field comprising information relating to regulating operation of a business component based at least upon prognostic data concerning a machine.
39. An industrial automation layout methodology, comprising:  
analyzing machine related prognostic data;  
analyzing business concern data;  
analyzing business objective data; and  
specifying machine acquisition based at least in part upon the analyses.
40. A computer-implemented method for ordering parts in an industrial automation environment, comprising:  
automatically receiving an analyzing data relating to a prognosis of a future state of a machine;  
automatically inferring a failure period for at least one part of the machine; and  
automatically ordering a replacement for the at least one part prior to the inferred failure period.
41. The method of claim 40 further comprising employing an options based scheme in connection with machine management.
42. The method of claim 40 further comprising employing an options based scheme in connection with decision support.

43. The method of claim 40 further comprising employing an options based scheme in connection with asset optimization.

44. A system that facilitates optimizing industrial business operations, comprising:

a component that receives data relating to state of a subset of machines that are part of the industrial business operations; and

a prognostics engine that infers future state of at least a subset of the operations based in part on the received data.

45. The system of claim 44, the prognostic engine infers future business conditions.

46. The system of claim 45, the future business conditions comprising at least one of future raw materials and future product demand.

47. A system that facilitates optimizing industrial business operations, comprising:

a component that receives data relating to state of a that is part of the industrial business operations; and

a prognostics engine that infers future state of at least a subset of the operations based in part on the received data.